**Faculty of Veterinary Medicine,**
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# Some Studies on Reproduction in Goats

A thesis presented by

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For

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**2015**

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# General abstract

This study was carried out in 4 experiments for studying important points associated with reproductive performance in goats.

**First experiment** aimed to investigate the incidence, timing and factors associated with embryonic/fetal losses (EFL) in 151 goats of different breeds [Zaraiebi, Damascus, and Cross goats]. All goats were examined by B-mode ultrasonography to monitor EFL during different stages of gestation. Results revealed a high EFL% between D20-23 to D47-54 (19.61 %) compared to the period >D47-54 to birth (11.76 %). A high EFL% was observed in Zaraiebi goats compared to others. The goats that were synchronized by P4 sponge, as well as, artificially inseminated showed a higher EFL % compared to goats with spontaneous estrus, and bred by natural mating, respectively.

**The 2nd experiment** goaled for evaluating testicular blood flow at supratesticular artery (STA) in 8 male Shiba goats by color Doppler ultrasonography after administration of either GnRH or hCG. Results indicated an increase of testicular blood flow in both groups. However, this increase was significantly higher and earlier in hCG group (1 hour) than that in GnRH group (2 hours).

**The 3rd experiment** aimed to identify whether inhibin hormone has a role in testicular hemodynamic in goats. Therefore, 9 adults Shiba bucks were injected with 10 ml of either inhibin antiserum (INH group; n = 5) or normal castrated goat serum (NGS group; n = 4). Results revealed significant decreases in the resistive index (RI) values of the STA and marginal testicular artery (MTA) in the INH group compared to those in the NGS group, which indicate an increase of testicular blood flow following immunization.

Finally, **the 4th experiment** aimed to investigate the expression and localization of kisspeptin in the testes of Shiba goats by real time PCR, and immunohistochemistry, respectively. Results revealed testicular expressions of mRNA encoding KISS1 and immunoreactivity of kisspeptin in Leydig cells. These expressions were higher in the postpubertal goats compared with that in the prepubertal goats.



**Key words:**

Color Doppler, Embryonic/fetal losses, Goats, Immunohistochemistry, Kisspeptin, PCR, Testicular blood flow.

# *DEDICATION*

*To all members in my family (my mother, father, brothers and my sister), for their support, guidance and good education. Without your love, I could not be this far.*

*To my beloved wife (**Faten**), and my sweet son (**Yassin**), for your patience, help, love, support and understanding throughout my study. Without you, I could not overcome both large and small obstacles along my study.*

# *ACKNOWLEDGEMENTS*

*First thanks for the merciful* ***GOD*** *who gave me strength and support to learn this new technology and achieve this work.*

*I would like to express my great gratitude to my promotor Prof. Dr.* ***Mohamed A.I. El Sayed****, prof. of Theriogenology, Faculty of Veterinary Medicine, Cairo University, Giza, Egypt, for his planning, kind supervision, valuable criticism and continuous encouragement.*

*I would like also to express my sincere appreciation to my promotor Prof. Dr.* ***Gen Watanabe****, prof. of Veterinary Physiology, Department of Veterinary Medicine, Faculty of Agriculture, Tokyo University of Agriculture and Technology, Tokyo, Japan, for his kind supervision, dedication, worthful advices, and generous encouragement and help throughout my work.*

*I would like also to extend my warmest appreciation to Prof. Dr.* ***Mostafa M.M. Abo-Ahmed****, prof. of Theriogenology, Faculty of Veterinary Medicine, Cairo University, Giza, Egypt, for kind supervision, and continuous encouragement.*

*Great gratitude is being expressed to Dr.* ***Aly M. A. Karen,*** *assistant Professor of Theriogenology, Faculty of Veterinary Medicine, Kafrelsheikh University, Kafrelsheikh, Egypt, for his supervision, constructive criticism and guidance in writing of the thesis.*

*I would also like to thank, and extend my warmest appreciation to Dr.* ***Kazuyoshi Taya****, Dr.* ***Kentaro Nagaoka,*** *and all* ***my colleagues*** *in Laboratory of Veterinary Physiology, Tokyo University of Agriculture and Technology, Tokyo, Japan, for their support, help, cooperation, friendship and encouragement during this study.*

*I am greatly indebted to Dr.* ***Kazuaki Sasaki,*** *Laboratory of Veterinary pharmacology, Tokyo University of Agriculture and Technology, Tokyo, Japan, for his great help and offering color Doppler ultrasound machine.*

*Great thanks to all* ***my professors and colleagues*** *in the Department of Theriogenology, Faculty of Veterinary Medicine, Cairo University, Giza, Egypt, for teaching and help.*

*I would like to thank* ***my family****, for their everlasting encouragement and Support in all my activities.*

*I would also like to thank* ***Station of Sheep and Goat Research (Sakha)*** *belonging to Animal Production Research Institute, Agriculture Research Centre, Kafr El-Sheikh governorate, Egypt for performing the first experiment in this study.*

*Grateful thanks to* ***Ministry of Higher-Education (MHE), Egypt*** *for funding of a Joint supervision scholarship in the period from March 2013 to March 2015.*

*Acknowledgement for providing antisera during the practical part:*

*We are also grateful to* ***Dr. A.F. Parlow*** *(National Institute of Diabetes and Digestive and Kidney Diseases, Beltsville, MD) for providing the RIA materials for ovine FSH and LH, Dr.* ***G.D. Niswender*** *(Animal Reproduction and Biotechnology Laboratory, Colorado State University, Fort Collins, CO) for providing antisera to estradiol-17β (GDN 244) and testosterone (GDN 250),and Dr.* ***Y. Mori*** *(University of Tokyo, Bunkyo-ku, Tokyo, Japan) for antiserum to ovine LH (YM-18). Additionally, we are grateful to Dr.* ***H. Okamura*** *(Laboratory of Neuroendocrinology, National Institute of Agrobiological Sciences, Ibaraki, Japan) for antiserum to kisspeptin (C2). We also express our gratitude to Dr.* ***Kei-ichio Maeda*** *(Department of Veterinary Medical Sciences, The University of Tokyo, Tokyo, Japan) for his instrumental advice.*

# *DECLARATION*

*I hereby declare that this thesis submitted by me to Cairo University for the degree of PhD, has not previously been submitted for a degree to any other university. I further cede copyright of the thesis in favour of Cairo University, Egypt.*

***Haney Samir Mohamed Mohamed***

*June, 2015*

# LIST OF ABBREVIATIONS

| ABBREVIATIONS | IDENTIFICATION |
|---|---|
| I.M | Intramuscular |
| iv | Intravenous |
| IU | International unit |
| TAU | Transabdominal ultrasonography |
| TRU | Transrectal ultrasonography |
| MHz | Mega hertz |
| ng/ml | Nanogram/millilitre |
| EFL | Embryonic and fetal losses |
| EIA | Enzyme immuno assay |
| SEM | Standard error mean |
| CL | Corpus luteum |
| r | Pearson correlation coefficient |
| P | P-value |
| AI | Artificial Insemination |
| ANOVA | Analysis of Variance |
| eCG | Equine Chorionic Gonadotrophin |
| FGA | Flurogestone Acetate |
| PGF2α | Prostaglandin F2α |
| IFN tau | Interferon tau |
| D | Day |
| P4 | Progesterone |
| °C | Celsius degree |
| EL vs FL | Embryonic loss versus fetal loss |
| S1 vs S2 | EFL at D20-23 to D47-54 versus >D47-54 to kidding |
| hr | hour |
| gr | gravity |
| sec | second |
| cm | centimeter |
| gm | gram |
| Kg | Kilogram |

| | |
|---|---|
| **rpm** | **Revolutions per minute** |
| **PMSG** | **Pregnant mare serum gonadotropin** |
| **oTP-1** | **Ovine trophoblast α interferons** |
| **bTP-1** | **Bovine trophoblast α interferons** |
| **cTP-1** | **Caprine trophoblast α interferons** |
| **PRID** | **Progesterone-releasing intravaginal device** |
| **RIA** | **Radioimmunoassay** |
| **L * W * H * 0.71** | **Length x Width x Heigh x 0.71** |
| **Pg/ml** | **Picogram/millilitre** |
| **T** | **Testosterone** |
| **E2** | **Estradiol** |
| **INH** | **Inhibin** |
| **FSH** | **Follicle Stimulating Hormone** |
| **GnRH** | **Gonadotrophin Releasing Hormone** |
| **hCG** | **Human Chorionic Gonadotrophin** |
| **LH** | **Luteinizing Hormone** |
| **oFSH** | **Ovine Follicle Stimulating Hormone** |
| **NSS** | **Normal sheep serum** |
| **NRS** | **Normal rabbit serum** |
| **ASGG** | **Anti-sheep gamma globulin** |
| **ARGG** | **Anti-rabbit gamma globulin** |
| **IgG** | **Immunoglobulin G** |
| mM | **Millimole** |
| **M** | **Mole** |
| **Ab** | **Antibody** |
| **PEG** | **Polyethylene glycol** |
| **IHH** | **Idiopathic Hypogonadotropic Hypogonadism** |
| **IF** | **Interstitial fluid** |
| **VEGF** | **Vascular endothelial growth factor** |
| **PBS** | **Phosphate buffer saline** |
| **BSA** | **Bovine serum albumin** |
| **BPH** | **Benign prostatic hyperplasia** |
| **NGS** | **Normal goat serum** |

| | |
|---|---|
| **PSV** | **Peak systolic velocity** |
| **EDV** | **End diastolic velocity** |
| **RI** | **Resistive index** |
| **PI** | **Pulsatility index** |
| **STA** | **Supratesticular artery** |
| **MTA** | **Marginal testicular artery** |
| **TV** | **Testis volume** |
| **m.PSV** | **Peak systolic velocity of the marginal testicular artery** |
| **m.EDV** | **End diastolic velocity of the marginal testicular artery** |
| **TAMAX** | **Time average maximum blood velocity** |
| **mRNA** | **Messenger ribonucleic acid** |
| **RT.PCR** | **Real time polymerase chain reaction** |
| **ActRII** | **Activin receptor II** |
| **m.RI** | **Resistive index of the marginal testicular artery** |
| **m.PI** | **Pulsatility index of the marginal testicular artery** |
| **TGF β type III** | **transforming growth factor beta receptor III** |
| **c-DNA** | **Complementary DNA** |
| **KISS1** | **Kisspeptin mRNA** |
| **GPR54** | **G protein- coupled receptor** |
| **ARC** | **Arcuate nucleus** |
| **AVPV** | **Anteroventral periventricular nucleus** |
| **KO** | **Knockout** |
| **P450scc** | **cytochrome P450 side-chain cleavage** |
| **3βHSD** | **3beta-hydroxysteroid Dehydrogenase** |
| **P450c17** | **cytochrome P450, 17alpha-hydroxylase/17, 20 lyase** |
| **P450arom** | **cytochrome P450 aromatase** |
| **C2 antiserum** | **Antikisspeptin antibody** |
| **PBST solution** | **0.05 mole of PBS+0.3 % Triton X-100** |

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